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ROY F. WESTON, INC.

DRAFT
SITE ASSESSMENT WORK PLAN
FOR
PHASE II
DOWNERS GROVE GROUNDWATER INVESTIGATION
DOWNERS GROVE, ILLINOIS

Releasable 10/02 J.P.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

DRAFT
SITE ASSESSMENT WORK PLAN
FOR
PHASE II
DOWNERS GROVE GROUNDWATER INVESTIGATION
DOWNERS GROVE, ILLINOIS

March 2002

Prepared for

U.S. Environmental Protection Agency
Emergency and Remedial Response Branch
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

DRAFT
SITE ASSESSMENT WORK PLAN
FOR
PHASE II
DOWNERS GROVE GROUNDWATER INVESTIGATION
DOWNERS GROVE, ILLINOIS

TDD No. 0111-010
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Approved by Omprakash S. Patel Date 3/28/02
for Kurt Fischer
START Technical Lead

Approved by Omprakash S. Patel Date 3/28/02
Omprakash Patel
Project Manager

Approved by Date 3/28/02
Dean Geers
Program Manager

Approved by ______________________ Date __________
Steve Faryan
U.S. EPA On-Scene Coordinator

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INTRODUCTION

1.1 PURPOSE AND ORGANIZATION

1.1.1 Purpose

On 7 January 2002, U.S. Environmental Protection Agency (U.S. EPA) Region V On-Scene Coordinator (OSC) Mr. Steve Faryan under TDD No. 0111-010 directed the Roy F. Weston, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START) to develop a Site Assessment Work Plan prior to initiating a Site Assessment for the Downers Grove Groundwater Investigation in Downers Grove, Illinois. The purpose of this Work Plan is to define the geologic investigation and sampling activities to be performed in order to provide more accurate data for evaluating the source of and potentially responsible parties (PRPs) for the chlorinated solvent groundwater contamination in the Downers Grove area.

1.1.2 Work Plan Organization

This Site Assessment Work Plan is divided into five sections including the following:

Section 1 – The remainder of this section presents an overview of the site background and history.

Section 2 – The scope of services section presents the planned project activities and provides the rationale and the sample-collection procedures that will be performed through the implementation of the Site Assessment Work Plan.

Section 3 – The project team organization documents the responsibility and authority of the organizations and key personnel involved with the implementation of the Site Assessment Work Plan and provides a description of the key personnel directing the Site Assessment.

Section 4 – The project schedule provides a schedule for Site Assessment activities.

1.2 SITE DESCRIPTION

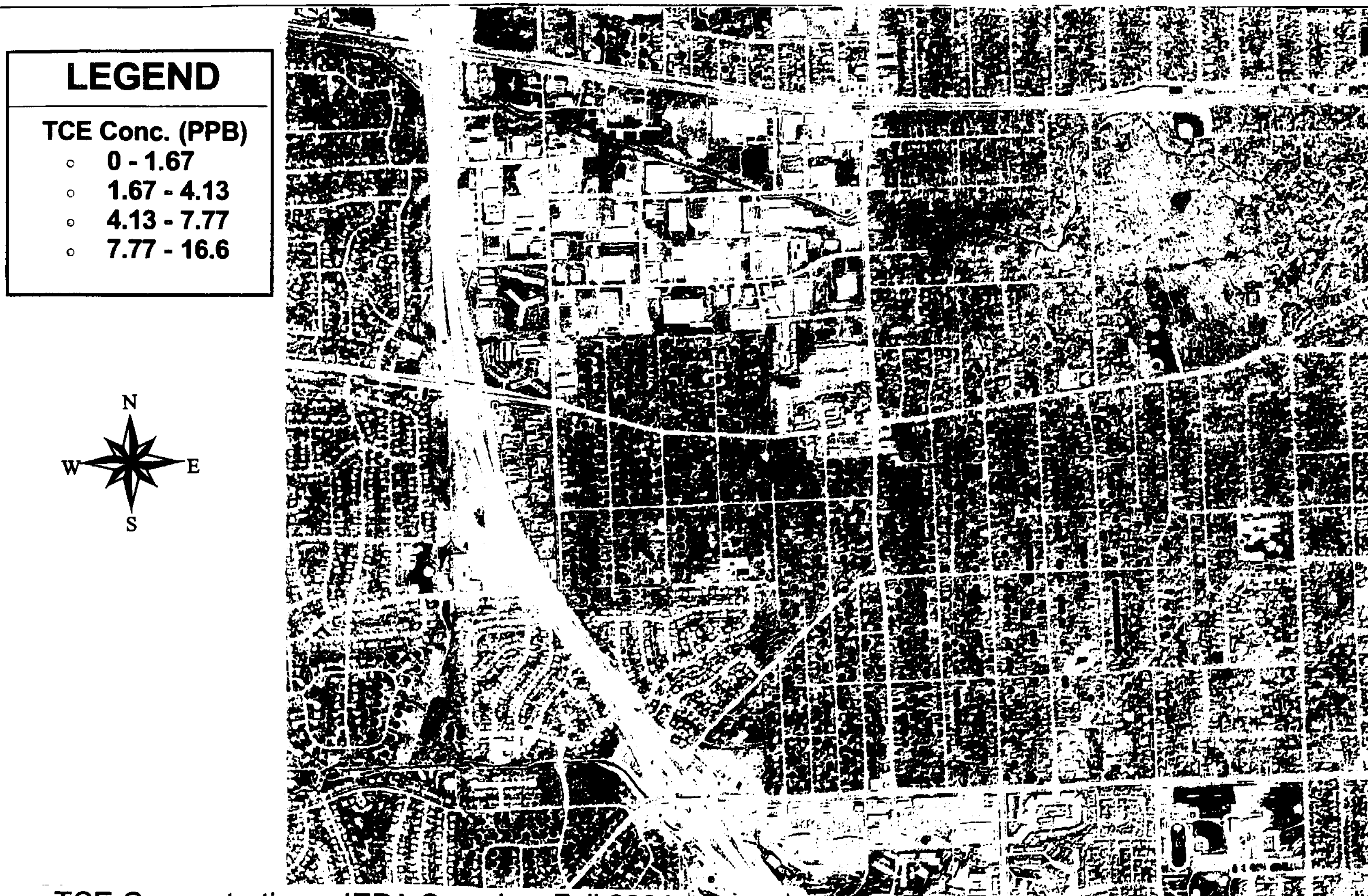
The Downers Grove Groundwater Site is located in unincorporated Downers Grove, DuPage County, Illinois. The site encompasses the area in which chlorinated-solvent groundwater contamination has been detected in groundwater as shown in Figure 1-1. The approximate boundaries of the site are Burlington Avenue to the north, 63rd Street to the south, Lee and Springside Avenues to the east, and Interstate 355 (I-355) to the west. The site consists of residential, recreational, and commercial/light industry. The Ellsworth Industrial Park is located in the northern portion of the site, and it is within this area that the source of the groundwater contamination is suspected. The Ellsworth Industrial Park is bordered on the north by Burlington Avenue; on the south by Elmore and Inverness Avenues; on the east by Belmont Avenue; and on the west by I-355. Figure 1-1 shows the industrial park based on a recent aerial photograph.

1.3 SITE BACKGROUND

1.3.1 Site Background/History

On 11 October 2001, U.S. EPA received a request from the Illinois Environmental Protection Agency (IEPA) to assign the appropriate personnel to conduct a time-critical removal assessment and possible removal action at the Downers Grove Groundwater Investigation Site located in unincorporated Downers Grove, DuPage County, Illinois.

Between spring and fall 2001, IEPA performed a groundwater investigation just east of I-355 near Downers Grove. The investigation was in response to citizen concerns related to recent private-



TCE Concentrations- IEPA Samples, Fall 2001

0 0.7 1.4 Miles

NOTE:
FIGURE ADAPTED FROM U.S. EPA FIGURE.

FIGURE 1-1

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM U.S. EPA CONTRACT No. 68-W-00-119 TDD No. S05-0111-010 DOCUMENT CONTROL No. 195-2A-	PROJECT AREA BASE MAP U.S. EPA Downers Grove, Illinois

well sampling in neighboring Lisle. The investigation consisted of three rounds of groundwater sampling throughout the area. Approximately 495 private wells were sampled and analyzed for levels of volatile organic chemicals (VOCs). Sample results indicated elevated levels of tetrachlorethylene (PCE), trichloroethylene (TCE), and other related VOCs. Approximately 52% of samples collected during Round 1 and Round 2 contained PCE or TCE above 5 parts per billion (ppb) (the federal drinking-water standards and the State of Illinois Maximum Contamination Limit [MCL]), and approximately 7% of the samples collected during Round 3 contained PCE or TCE levels above 5 ppb.

In October 2001, Parsons Engineering Science, Inc. (Parsons) performed a Cone Penetration tTest (CPT) investigation within the Ellsworth Industrial Park for IEPA. The investigation used a CPT rig to log the shallow lithology in the area and collect groundwater samples at a variety of depths above the bedrock in order to identify the source(s) of the chlorinated-solvent releases. The area of investigation included only the southern and southeastern-most portions of the industrial park along portions of Wisconsin, Elmore, and Inverness Avenues. During the investigation, Parsons was able to collect three groundwater samples from two boring locations using the CPT sampler. Difficulties were encountered due to low groundwater inflow rates, which the tight clay soil found in the area of investigation likely caused. In the areas where the CPT sampler could not be used, Parsons installed temporary 3/4-inch polyvinyl chloride (PVC) piezometers. The piezometers were screened over intervals ranging from approximately 20 to 35 ft. Twenty-eight groundwater samples were collected from 27 separate sampling locations within the industrial park. Of the 28 groundwater samples, only one sample (CPT-07, from 74.7 - 72.9 feet below ground surface) contained TCE above the method detection limit.

In February 2002 START performed a CPT investigation within the Ellsworth Industrial Park for IEPA. START used the CPT technology to advance additional borings throughout the industrial park and selected areas east of the park. The CPT rig was used to advance stratigraphy borings, which defined the geology at each location as well as identified the presence of water-bearing zones through the unconsolidated overburden formations. Each CPT boring was advanced to refusal, which ranged from 12.14 ft to 79.89 ft. A total of 35 locations were drilled using the CPT rig. Once water-bearing zones were identified, depth intervals were selected for groundwater sampling. The groundwater samples were collected using a steel bailer. In the event that the CPT rig was unable to collect the required groundwater samples using a steel bailer, a temporary piezometer was installed at the stratigraphy boring location. A total of 31 groundwater samples and 14 quality assurance quality control (QA/QC) samples were collected. To monitor for the potential presence of soil gas vapors, a photo- or flame-ionization detector (PID/FID) was used to collect readings just below the borehole surface after retraction of CPT tools and prior to borehole grouting. The results of the CPT investigation are provided on Figure 1-2.

1.3.2 Phase II Site Assessment Area

The Phase II Site Assessment will focus on Rexnord, Ames, Scott, Arrow Gear, and Precision properties, which are located in Ellsworth Industrial Park, Downers Grove, Illinois.

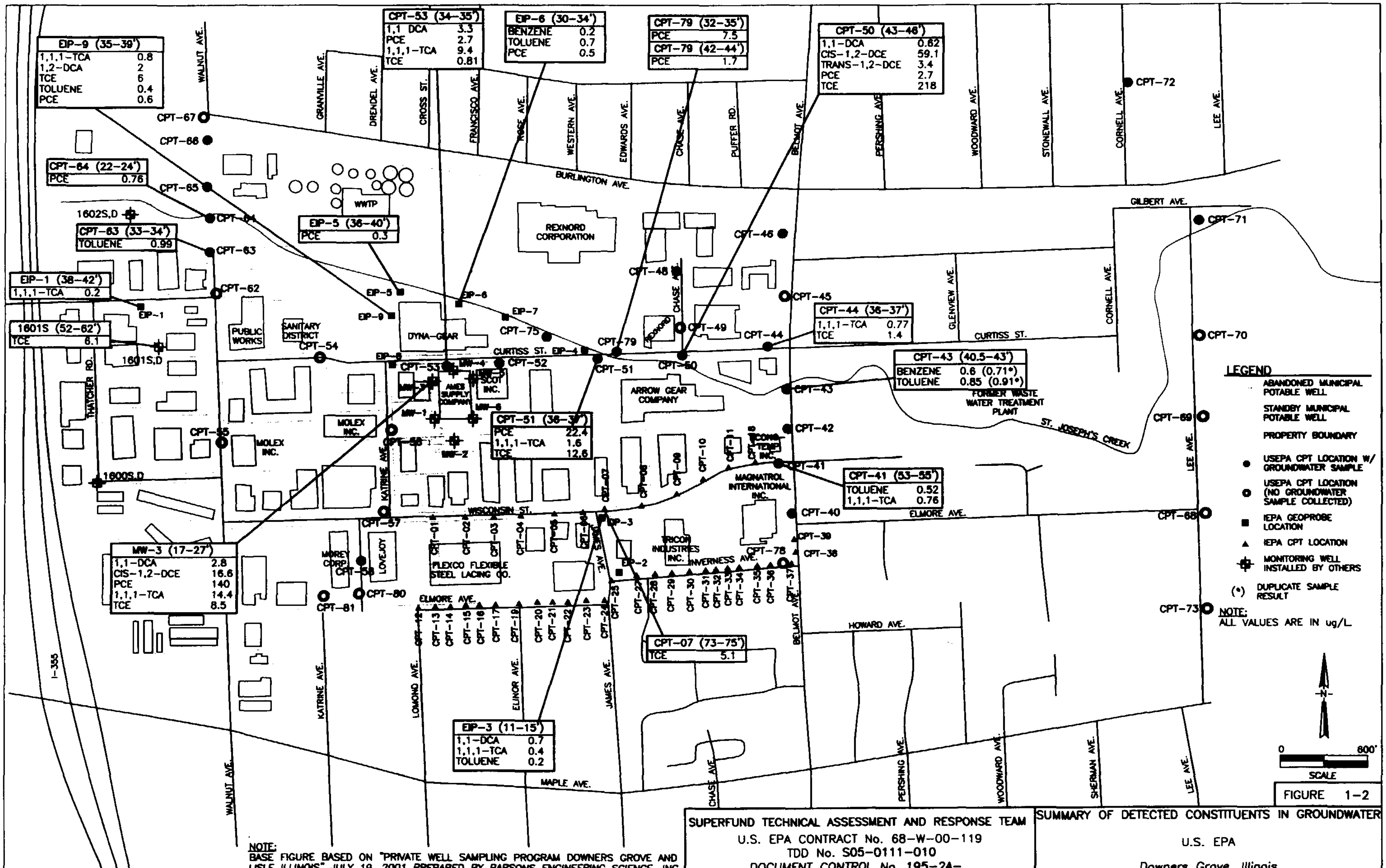


FIGURE 1-2

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
U.S. EPA CONTRACT No. 68-W-00-119
TDD No. S05-0111-010
DOCUMENT CONTROL No. 195-2A-

SUMMARY OF DETECTED CONSTITUENTS IN GROUNDWATER
U.S. EPA
Downers Grove, Illinois

SECTION 2
DEVELOPMENT OF WORK PLAN

2.1 INTRODUCTION

This Phase II Site Assessment (SA) Work Plan (Work Plan) has been prepared based on the available background information, results of CPT investigation, Geoprobe® investigation, and discussions with U.S. EPA and IEPA.

The Work Plan includes site-specific background information, site-specific project plans, results of recent START field investigaiton, appropriate U.S. EPA guidance, and technical direction provided by the U.S. EPA OSC. The Work Plan includes the following:

- Identification of SA elements and associated tasking - This includes reviewing site documentation, previous field sampling, and analysis activities. Output of this task will be a detailed work through breakdown structure (WBS).

- Technical Approach - The technical approach includes a description of each task; the technical approach for performing each task and assumptions used; any information to be produced during and at the conclusion of each task; and a description of the deliverables to be produced.

- Schedule - The schedule includes dates for completion of each required task and major submittals identified in various tasks and their due dates. The schedule also includes information regarding timing, initiation, and completion of critical-path milestones.

- Project Staff - The project staff section includes the proposed personnel that will complete the activities defined for each task based on their qualifications and experience.

START will revise and submit the revised Work Plan to incorporate U.S. EPA's comments into the final Work Plan, if necessary. This Work Plan has been prepared based on the available information at the time of preparation.

2.2 EVALUATION OF EXISTING INFORMATION AND CONTINUING FACILITY REVIEW

2.2.1 Evaluation of Existing Information

In October 2001, IEPA sent out information-request letters to approximately 21 facilities that had been identified during their initial door-to-door survey of the Ellsworth Industrial Park in Downers Grove, Illinois, as using chlorinated cleaners/solvents or other types of chlorinated materials. The information IEPA requested pertained to the site activities related to the purchasing, receiving, processing, storing, treating, disposing, or otherwise handling hazardous substances. START reviewed this information along with available records from the U.S. EPA Records Center in order to develop a list of facilities in the industrial park identified as using chlorinated solvents. Based on the available information, each facility was then ranked according to its potential to be the source of contamination in the Downers Grove area. START identified approximately 12 facilities as having a high potential for contributing to the sources of the PCE/TCE contamination. These facilities and supporting information are summarized in the Table included in Attachment 1. The facilities are identified on Figure 2-1. This review and identification of potential-source facilities provided the basis for sample-location selection within the industrial park. The information for the facilities is provided in the Work Plan prepared for the preliminary investigation and in the Site Assessment Report prepared for the initial assessment. There were several facilities in which no or limited information was available to review. Therefore, there may be additional facilities that are identified as potential sources of PCE/TCE contamination upon receipt of additional information.

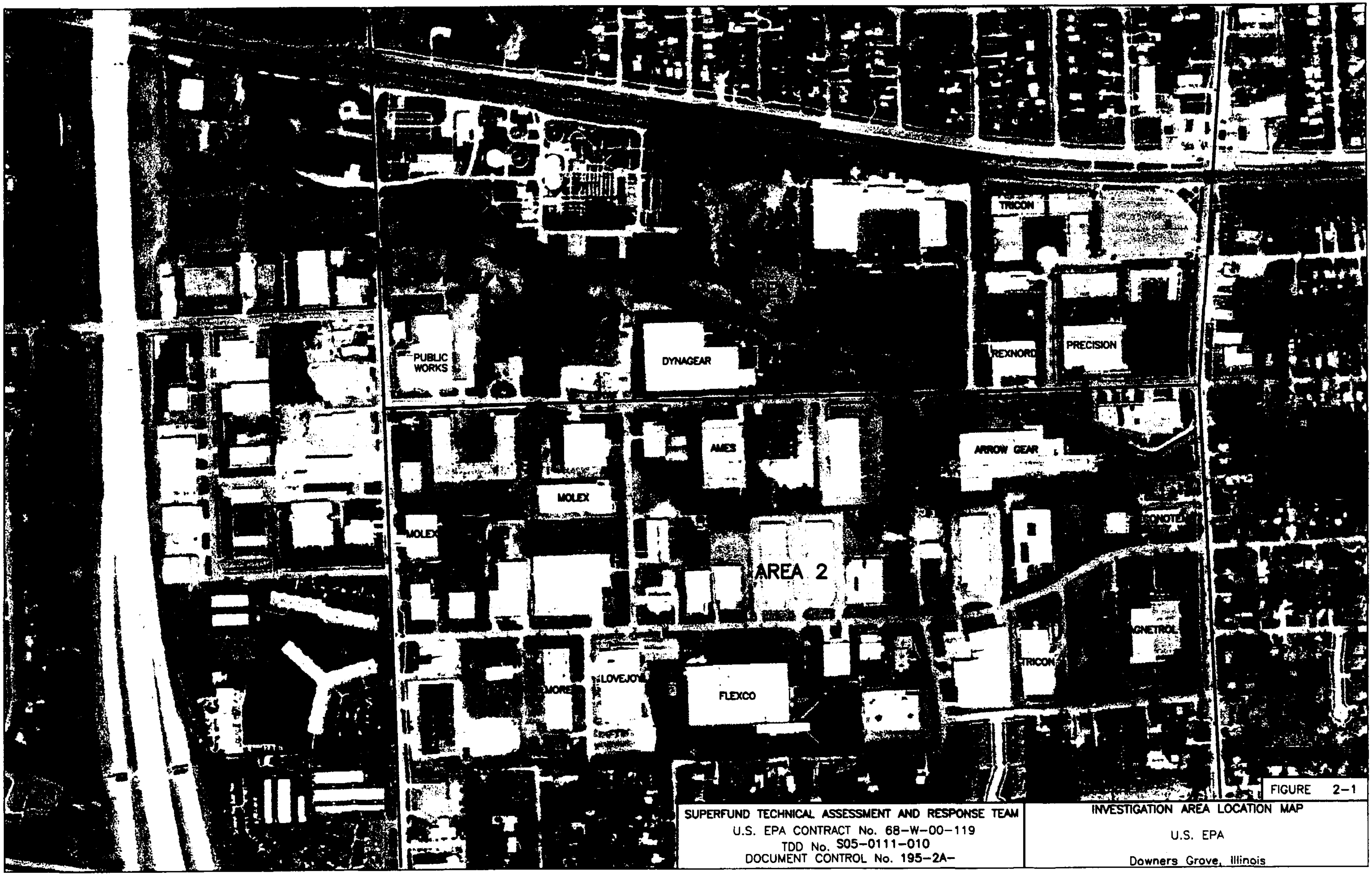


FIGURE 2-1

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
U.S. EPA CONTRACT No. 68-W-00-119
TDD No. S05-0111-010
DOCUMENT CONTROL No. 195-2A-

INVESTIGATION AREA LOCATION MAP
U.S. EPA
Downers Grove, Illinois

2.2.2 Continuing Facility Reviews

In order to obtain additional information, U.S. EPA sent additional 104(e) questionnaires to each of the facilities identified as using chlorinated solvents within the Ellsworth Industrial Park. For facilities where little or no existing information was known, a standard 104(e) form was sent. For facilities where some historical information was known, a focused 104(e) was sent. U.S. EPA has received responses to the 104(e) questionnaires, which are currently under review at the time of this Work Plan preperation.

2.3 PREPARATION OF SITE-SPECIFIC PLANS

Site-specific planning documents developed for previous field investigation activities include the following:

- Health and Safety Plan;
- Sampling and Analysis Plan.

2.3.1 Health and Safety Plan

In accordance with Occupational Health and Safety Administration (OSHA) guidelines and WESTON corporate health and safety policy, a site-specific Health and Safety Plan (HASP) is required for all field tasks. The HASP specifies employee training, protective equipment, medical-surveillance requirements, standard operating procedures, and a contingency plan in accordance with 29 Code of Federal Regulations (CFR) 1910.120.

The HASP prepared for the Phase I Site Assessment will be updated to include the activities outlined in this Work Plan.

2.3.2 Sampling and Analysis Plan

A Sampling and Analysis Plan (SAP) will be prepared to address the field-investigation activities outlined in this Work Plan. The SAP will define the sampling and data-collection methods that will be used for the project. The SAP will include sampling objectives; sampling locations and frequency; and a breakdown of the samples that the laboratory will analyze. The SAP will consider the use of all existing data and will justify the need for additional data whenever existing data will meet the same objective.

2.4 FIELD INVESTIGATION

This SA is being done to identify the potential sources that may be contributing to groundwater contamination in Downers Grove residential wells. The field investigation is being designed based on the results of Parsons's CPT investigation, IEPA's Geoprobe investigation, START's CPT investigation, and available background information for the facilities in the industrial park. A field investigation will be performed at facilities identified based on available investigation results that WESTON has in regards to any releases of hazardous substance (primarily chlorinated solvents such as PCE, TCE, cis-1,2-dichloroethylene (DCE), trans-1,2-DCE, and vinyl chloride), and U.S. EPA performed the draft areal-photograph analysis. Also, the drainage pattern in the historical areal photographs were utilized to determine sample location. The investigation will include collection of sediment samples from the St. Joseph Creek, a shallow soil investigation using Geoprobe, a deep soil investigation using an HSA drill rig, shallow monitoring-well installations in the glacial deposits, and installation of deep monitoring wells in the upper portion of the bedrock. The soil, sediment, and groundwater samples collected during the investigation will be analyzed for VOCs. The placement of the proposed Geoprobe soil borings, deep soil borings, shallow monitoring wells, and deep bedrock wells are presented in Figure 2-2, and the rationale for each placement is presented in Table 2-1. The sediment-sample locations will be identified during field investigation Area . For

Table 2-1

Rationale for Sampling Location
Ellsworth Industrial Park
Downers Grove, Illinois

Location	Rationale
DY-B01 (Dynagear)	This boring location is proposed to evaluate a potential hit detected during the IEPA Geoprobe investigation during the initial SA.
RE-B02 through RE-B19 (Rexnord)	These borings are proposed to evaluate potential subsurface contamination on the Rexnord Corporation
PR-B20 through PR-B22 (Precision)	These borings are proposed to evaluate potential subsurface contamination on the property occupied by Precision.
SC-B23 (Scot)	This boring is included to evaluate potential contamination in the former underground strogae tank (UST) area.
AR-B24 thorugh AR-B27 (Arrow Gear)	These borings are proposed to evaluate potential subsurface contamination on the property occupied by Arrow Gear.
Geoprobe Boring	Geoprobe borings are proposed to investigate for shallow soil contamination on subject properties.
Monitoring Wells in Glacial Deposits	Monitoring wells in the glacial deposits will be utilized to investigate impact to the shallow saturated zone and, if possible, link contamination to a source.
Bedrock Monitoring Wells	The bedrock monitoring wells will be utilized to link the contamination to a source, if possible.
Sediment Samples	The sediment samples will be collected to evaluate if the industrial park has contaminated the St. Joseph Creek and also to evaluate if the Creek is a potential source.

ease in understanding the scope, the scope area is broken down into two areas, Area 1 (Figure 2-2) and 2 (Figure 2-3). The method for each investigation is outlined below in detail. The sample identification number is provided on Figure 2-2 and Figure 2-3. For nested monitoring wells, identification 'S' will be used for shallow monitoring well in the glacial deposits; 'I' will be used for the intermediate monitoring well in the glacial deposits; and 'D' will be used for the bedrock monitoring well. For example; if a well nest with three wells will be installed at monitoring-well location MWA, the shallow monitoring well will be identified as MWA-S; the intermediate monitoring well will be identified as MWA-I; and the bedrock monitoring well will be identified as MWA-D.

2.4.1 Geoprobe Investigation

IEPA will perform the Geoprobe investigation; therefore, no WESTON START effort has been included for the Geoprobe investigation. WESTON START will ship the samples IEPA collects to WESTON START-procured laboratory for VOC analysis, if requested by the IEPA and approved by the U.S. EPA. In addition, the Geoprobe rig will be outfitted with a Membrane Interface Probe (MIP), which is capable of monitoring and detecting the presence of total volatile organics as the probe is advanced through the subsurface. This will determine the presence and relative depth of any gross VOC contamination encountered. The Geoprobe investigation will also be performed by IEPA along the sewer lines with the Ellsworth Industrial Park to evaluate if the TCE contamination source is present along the sewer lines.

2.4.2 Soil-Boring Drilling and Sampling Procedure

A HSA 4.25-inch inside diameter (ID) hollow-stem augers will be utilized for the soil-boring investigation. Continuous samples from the borings will be collected using a decontaminated 2-foot split-spoon sampler. Following removal from the borehole, the split-spoon sampler will be opened on a clean surface (e.g., polyethylene sheeting) for logging and analysis by the START on-site geologist. The samplers and associated equipment that come into contact with the soil will be

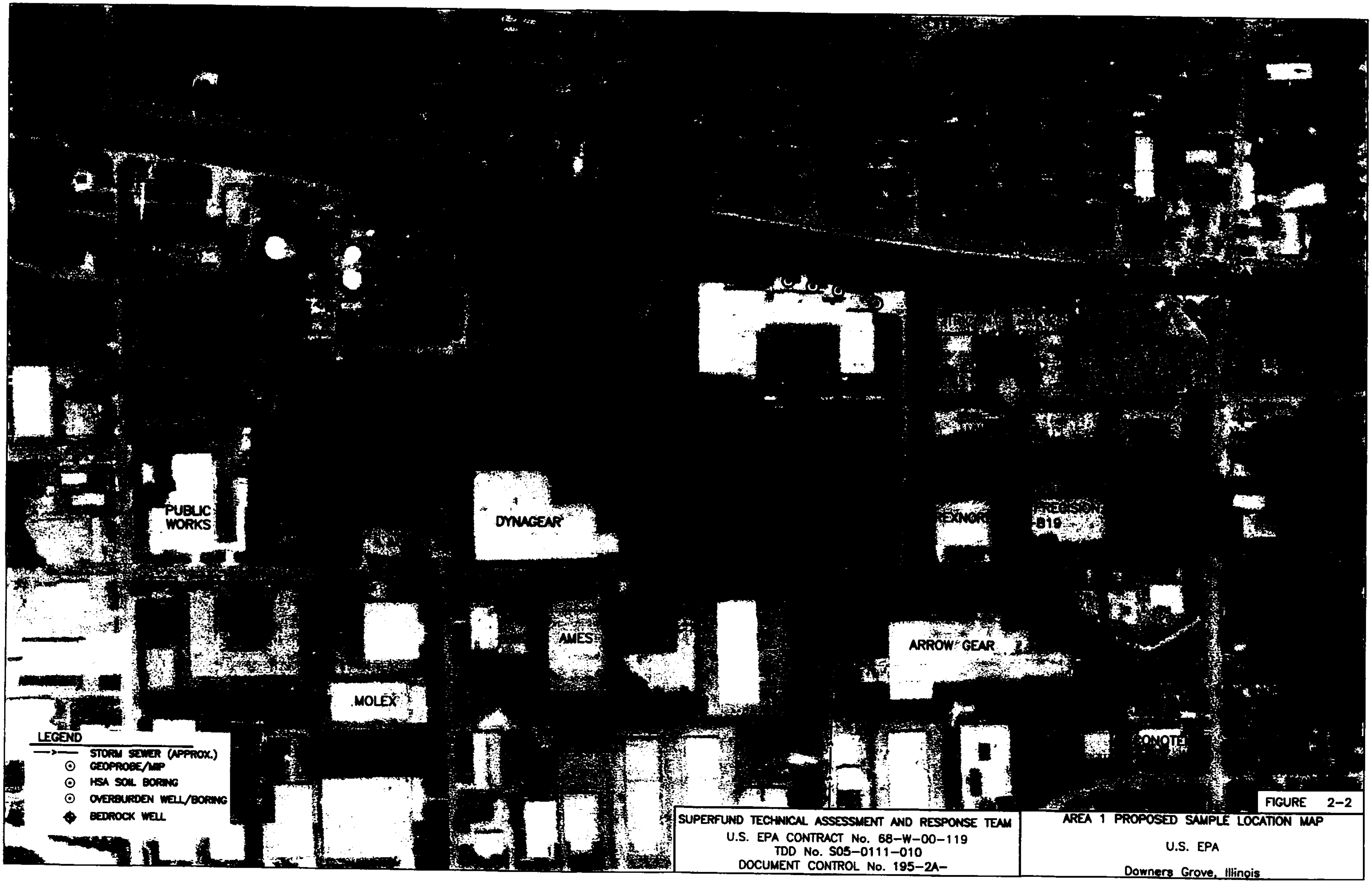


FIGURE 2-2

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
U.S. EPA CONTRACT No. 68-W-00-119
TDD No. S05-0111-010
DOCUMENT CONTROL No. 195-2A-

AREA 1 PROPOSED SAMPLE LOCATION MAP
U.S. EPA
Downers Grove, Illinois

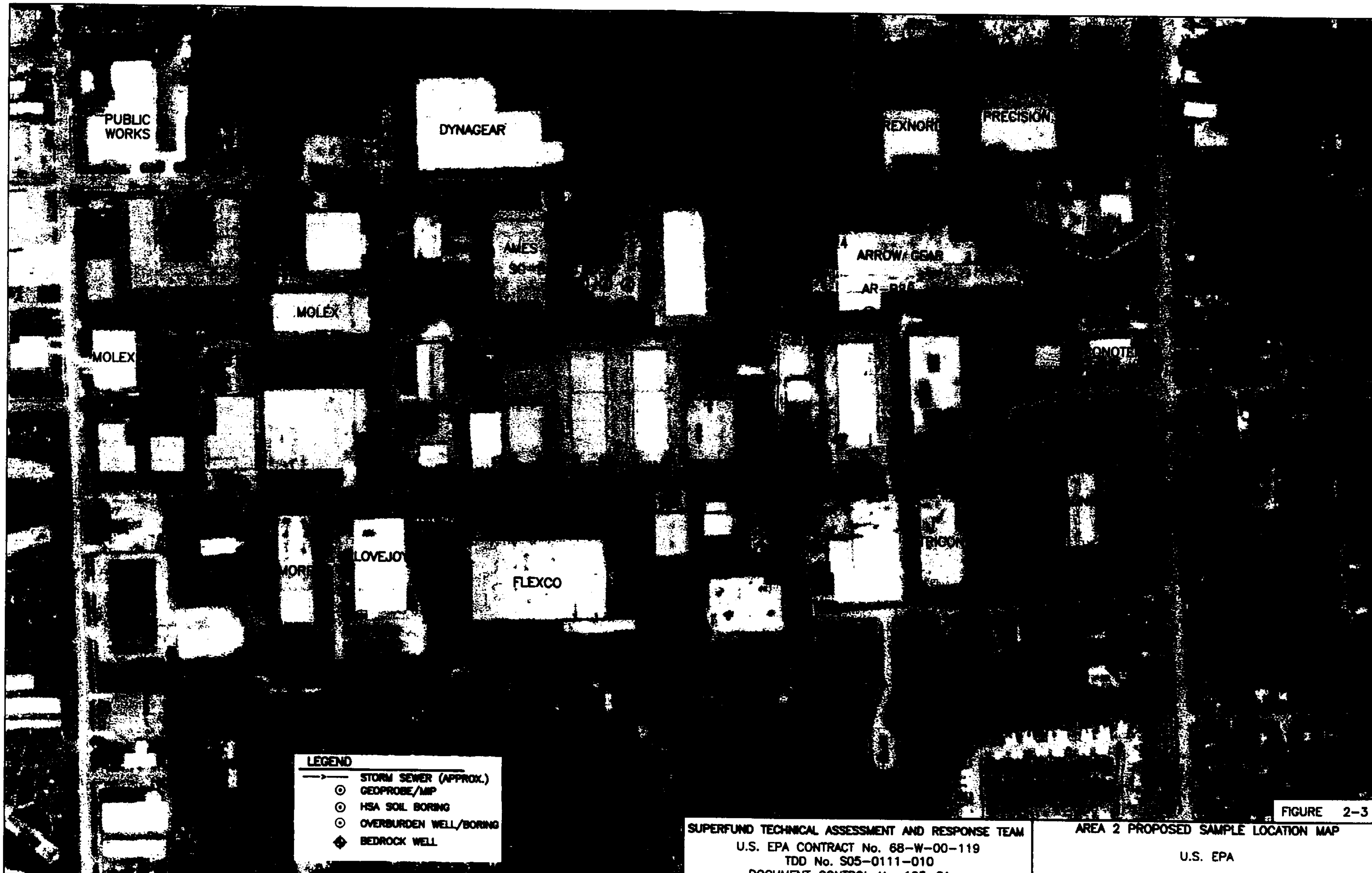


FIGURE 2-3

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
U.S. EPA CONTRACT No. 68-W-00-119
TDD No. S05-0111-010
DOCUMENT CONTROL No. 195-2A-

AREA 2 PROPOSED SAMPLE LOCATION MAP
U.S. EPA
Downers Grove, Illinois

Table 2-2

Standard Decontamination Protocol for Sampling Equipment
Ellsworth Industrial Park
Downers Grove, Illinois

Step	Procedure
1	Scrub equipment thoroughly with soft-bristle brushes in a phosphate-free, low-sudsing detergent solution.
2	Rinse equipment with tap water by submerging and/or spraying. (See note below).
3	Rinse equipment with reagent-grade distilled/deionized water until dripping and allow to air dry for 1 to 2 minutes.
4	Rinse equipment a second time with deionized water by spraying until dripping.
5	Wipe dry with paper towels.

Note: The decontamination liquids will be managed as described in Section 2.4.10. If sampling equipment was used to collect oily or adhesive types of contaminated media or the presence of organic-compound residue is suspected, a rinse via spraying with isopropanol will be included after Step 2.

Table 2-3

Standard Decontamination Protocol for Drilling Equipment
Ellsworth Industrial Park
Downers Grove, Illinois

Step	Procedure
1	Move the drilling rig or other equipment/materials to the designated decontamination area at the site.
2	Support all augers and related downhole drilling equipment above ground and individually steam clean.
3	Steam clean the control panel and working area of the drill rig.
4	Place all decontaminated well materials (e.g., well casing, well screen) on clean polypropylene sheeting until use.

Notes: All steam cleaning will be performed using pressurized steam. Steam cleaning will continue until all solid material and/or visible contamination is removed. The decontamination liquid will be managed as described in Section 2.4.10.

decontaminated between samples (Table 2-2). Before drilling at any locations, the driller will decontaminate the working end of the drill rig, hollow-stem augers, drilling equipment, and tools using a high-pressure steam cleaner at the aforementioned decontamination pad area (Table 2-3).

Two soil samples will be collected from each deep boring location. A head-space screening will be performed on each split-spoon sample collected with a FID or PID. The depth of the sample collection will be determined in the field by screening soil head space using field monitoring equipment such as a PID or FID. The two soil samples showing presence of the highest levels of VOCs based on head-space screening results will be submitted to the laboratory for VOC analysis. If necessary, additional soil samples may be submitted for VOC analysis depending on the results of head-space screening. The samples will be immediately transferred in the sample bottle, and sample bottles will be completely filled with no head space. Sample bottles will be placed on ice immediately following collection of a sample.

The sampling equipment will be decontaminated according to the procedures outlined in Table 2-2.

2.4.3 Monitoring-Well Installation Procedures

The shallow and bedrock monitoring wells will be installed at locations shown in Figure 2-2 and Figure 2-3. At some locations more than one shallow monitoring well may be installed based on the geology encountered during soil boring. The depth of each shallow and bedrock monitoring well will be determined by the field geologist in consultation with the WESTON START hydrogeologist. At locations shown as bedrock monitoring well, nested wells will be installed depending on saturation conditions encountered. The nested wells will include a shallow monitoring well and a bedrock monitoring well.

At some of the soil boring locations, monitoring wells will be installed in the overburden material depending on the saturated conditions encountered. These monitoring wells will be constructed using the following materials and methods:

- The monitoring well will be constructed of 2-inch-diameter type 304 riser pipe with flush-threaded couplings. Well screens will be 5 or 10 feet long and will be constructed of type 304 stainless steel with continuously slotted 0.010-inch openings. The end of the well screen should be covered with an end cap.

- The annular space around the screen will be filled with a silica sand pack that is allowed to collapse as the augers are pulled out of the ground. The sand pack will extend 2 feet above the screen.

- After the sand pack is in place, the annular space above the sand pack will be sealed with 2 feet of bentonite pellets (shallow wells) or a high-solids pure bentonite grout tremmied in from bottom up (deep wells). Where bentonite pellets are used, they will by hydrated with potable water and allowed to stand for 15 minutes before construction continues.

- If bentonite pellets are used for the well seal, the remaining annular space around the wells will be backfilled above the seal using tremmied cement/bentonite grout (6 parts cement to 1 part bentonite by volume). Where high-solids pure bentonite grout is used, it will be brought up to within 3 feet of the ground surface.

- A minimum 2-foot-diameter, 4-inch-thick concrete pad will be installed at the ground surface around each of the monitoring wells. The pads will be made of ready-mix concrete and will be sloped away from the well to provide surface-water diversion.

- The riser pipe should stick up above the ground surface about 2.5 feet and be fitted with an expandable locking cap. To provide well protection, each well will be furnished with a pro cover that is approximately 3 feet in length. The pro cover will be set in the concrete apron at all monitoring well locations. Locks should be provided. In areas of vehicular traffic, a flush-mounted surface casing may be installed.

The schematic for the shallow monitoring well is provided in Figure 2-4. The schematic for the bedrock monitoring well is provided in Figure 2-5.

The sampling equipment will be decontaminated in accordance with the procedures outlined in Table 2-2. The drilling equipment will decontaminated in accordance with the procedures outlined in Table 2-3.

2.4.4 Rock Drilling

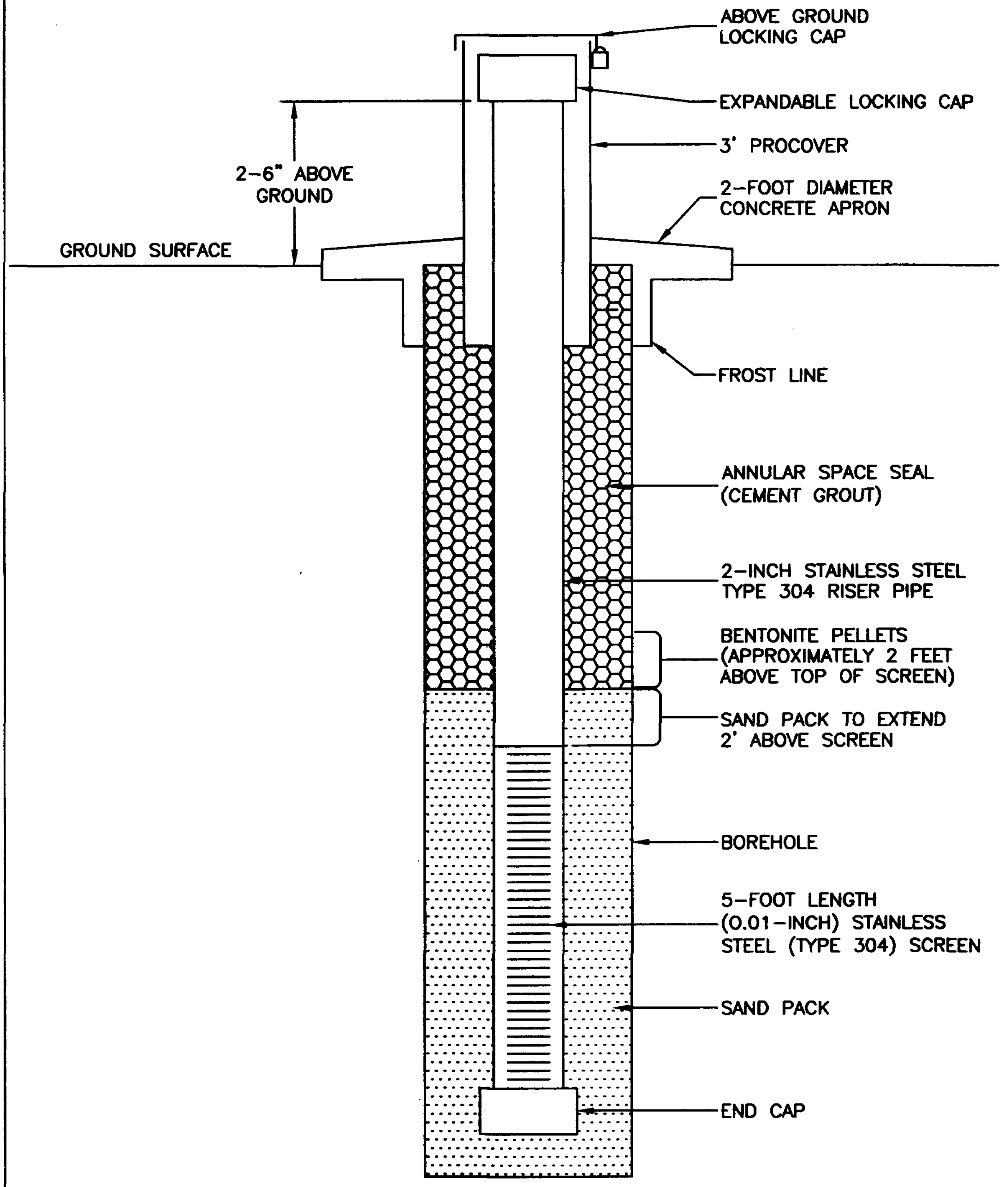
At locations where bedrock wells are to be installed, drilling will occur through the overburden using techniques described in Section 2.5.1 to the bedrock interface. The augers will be drilled up to a few feet into the upper bedrock surface to seat the augers and seal off the overburden materials. The bedrock will then be drilled using a 3 7/8-inch tricone rotary bit. The depth of rock drilling will be determined by the START Geologist but is expected to be approximately 15 feet. No drilling mud or additives is expected to be used during the rock-coring process. Only water shall be used. Any water lost to the formation during drilling will be recorded such that an equivalent volume can be evacuated during well development. The monitoring well construction and materials will be as described in the Section 2.4.3. All rock-coring equipment and tools will subsequently be decontaminated after each use with a high-pressure steam cleaner at the decontamination pad. The decontamination procedures are outlined in Table 2-3.

2.4.5 Monitoring-Well Development Procedure

After installation of all monitoring wells, each well will be developed using the following procedure:

- All equipment to be introduced into the well will be decontaminated in accordance with the procedures outlined in Table 2-2.

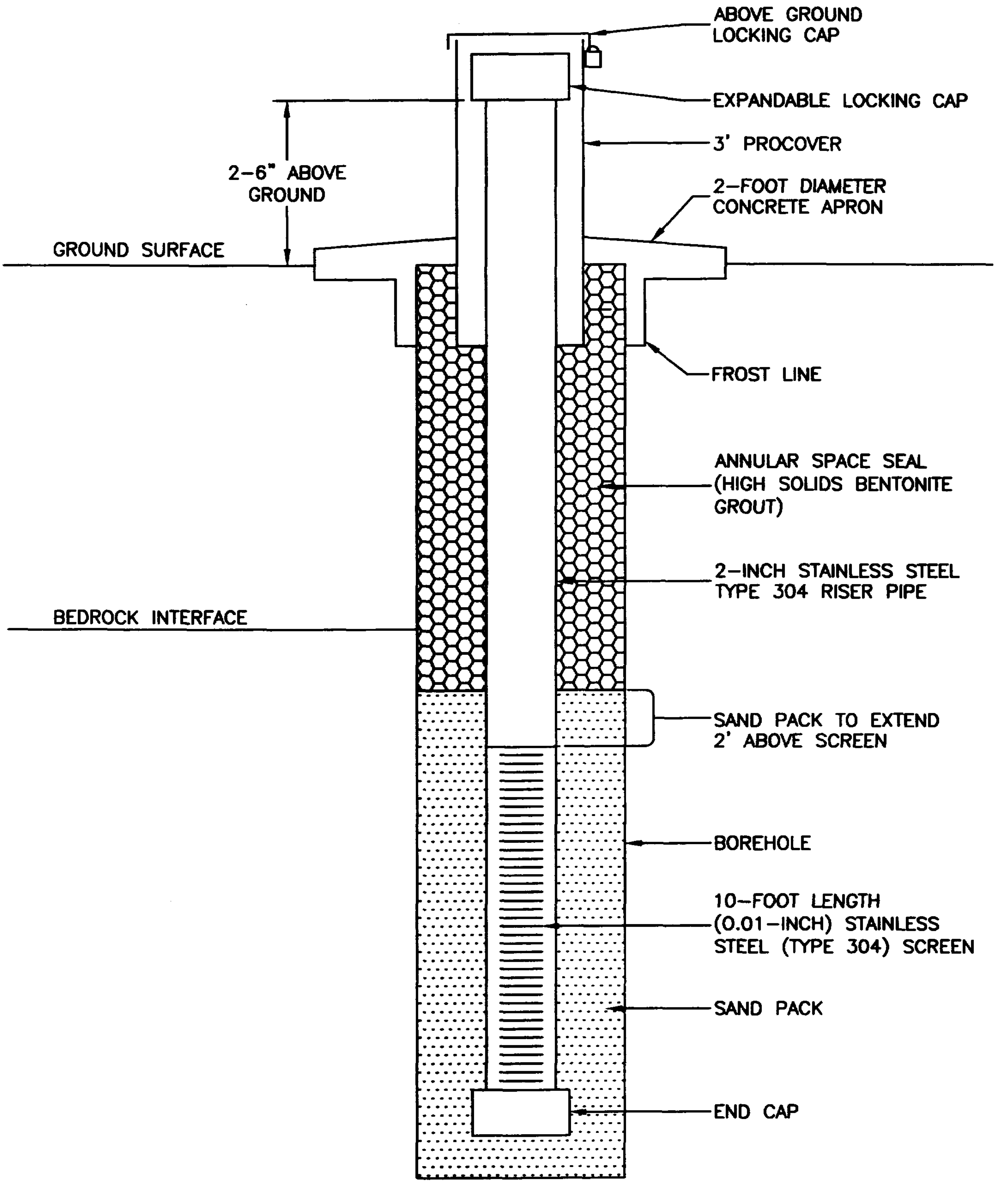
- New monitoring wells will be developed no sooner than 48 hours after installation.



NOT TO SCALE

FIGURE 2-4

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM U.S. EPA CONTRACT No. 68-W-00-119 TDD No. S05-0111-010 DOCUMENT CONTROL No. 195-2A-	SHALLOW MONITORING WELL CONSTRUCTION ELLSWORTH INDUSTRIAL PARK USEPA Downers Grove, Illinois



NOT TO SCALE

FIGURE 2-5

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM U.S. EPA CONTRACT No. 68-W-00-119 TDD No. S05-0111-010 DOCUMENT CONTROL No. 195-2A-	BEDROCK MONITORING WELL CONSTRUCTION ELLSWORTH INDUSTRIAL PARK USEPA Downers Grove, Illinois

Each well will be developed by alternately surging and purging. The surge and purge cycle will consist of several minutes of surging followed by several minutes of purging to remove material collecting in the bottom of the well. The surging will be accomplished by rapidly moving a weighted bailer or surge block in the screened interval. This will be followed by purging the well using a bailer or pump to remove the suspended sediment.

- A positive displacement pump, bladder pump, or disposable bailer will be used for well development and will be decontaminated in accordance with Table 2-2 before being used in a well. After removing the third well volume, WESTON START will measure readings for pH, temperature, and specific conductance. Well development will continue until these readings stabilize for two consecutive volumes (0.25 units for pH, ±10 percent for specific conductance, and ±1°C for temperature). A minimum of five well volumes will be purged during development.

- If water is added to the bedrock monitoring well during the drilling process, an amount of water equal to any water lost during drilling and rock coring will also be purged during the development process.

- If the well can be purged dry, it will be developed in a manner that limits agitation by slowly purging the well dry. Wells that can be purged dry will not be surged, and no water will be added to the well.

Well-development water will be managed in accordance with the requirements outlined in Section 2.4.10.

2.4.6 Groundwater Sampling

The newly installed monitoring wells will be sampled no sooner than 48 hours after well development. The groundwater samples will be collected using low-flow technique. The groundwater will be purged at a rate between 100 and 500 milliliters per minutes (ml/minute) until pH, conductivity, temperature, and turbidity have stabilized. The groundwater samples will be collected in a 40-ml vial. Following collection of the groundwater samples, each sample bottle will be checked for presence of air bubbles. The groundwater samples will be preserved and placed on ice immediately following collection of the samples. The samples will analyzed for VOCs using SW

846 Method 8260.

2.4.7 Sediment Sampling

The sediment-sample locations have been selected based on the information on the outfalls in the St. Joseph Creek. For this investigation, a limited number of sediment samples are planned to evaluate if the creek is a source of groundwater contamination. The sediment-sample locations will be determined during the field investigation.

Two sediment samples, one each at a depth of 0-6 inches and 6-12 inches, will be collected at each location using a hand auger. The sampling will begin from the most downstream location and proceed progressively to the upstream locations. Sediment samples will be collected as near to the midstream or midchannel as possible. Sampling at midstream may be changed in the field due to safety concerns and to minimize sediment disturbance by the sample team walking in the stream. The sample bottles will be completely filled with no head space. The samples will analyzed for VOCs using SW 846 Method 8260.

The sampling equipment will be decontaminated between sample locations using the equipment-decontamination procedures outlined in Table 2-2.

2.4.8 Construction of Temporary Decontamination Pad Procedure

The drilling subcontractor will construct a temporary decontamination pad. START will work with the U.S. EPA OSC to find a suitable decontamination-pad location with the industrial park. The decontamination pad will be constructed in such a way as to allow the drill rig to back onto it during the decontamination process, as necessary. The pad will contain a curbed edge and be capable of collecting and holding all decontamination fluids derived during the decontamination of drilling equipment. The decontaminated fluid will be transferred into drums or a temporary tank and transferred to a location where the investigation-derived waste (IDW) is stored. The temporary pad will be removed at the completion of the project, and the site will be restored to its original condition.

2.4.9 Decontamination Procedures

All sampling equipment including stainless-steel spoons, spatulas, bowls, split spoons, continuous samplers, and bailers will be decontaminated before used to collect a sample. The decontamination procedures are outlined in Table 2-2.

The working end of the drill rig and all downhole and associated drilling equipment, tools, and materials will be decontaminated prior to drilling each new soil boring and monitoring well. Only previously decontaminated equipment will be placed in a boring or well. All drilling-related equipment (except the split-spoon or continuous sampler) will be decontaminated in accordance with the protocols presented in Table 2-3.

The management of water generated during decontamination will be in accordance with the requirement outlined in Section 2.4.10.

2.4.10 Management of Investigative-Derived Waste

All IDW generated during drilling activities will be containerized. This includes soil and waste cuttings, well-development water, steam-cleaning rinsate, and used personal protective equipment (PPE). The IDW will be stored in the U.S. Department of Transpiration (DOT)-approved 55-gallon drums.

All IDW drums will be transferred to the temporary drum staging area within the industrial park. START will work with the U.S. EPA OSC to find a suitable location within the industrial park for temporary storage of IDW. Each drum will be marked with the date, drilling location, and contents using a permanent paint marker or affixing a weather-resistant sticker containing the required information to the drum.

WESTON START will initiate disposal of the IDW within two weeks of completion of Phase II Site Assessment.

2.5 ANALYTICAL PARAMETERS

It is estimated that START will collect approximately 40 groundwater samples during this SA. In addition to these samples QA/QC samples will also be collected. The groundwater samples will be collected from each shallow and deep monitoring-well location. Groundwater samples will be analyzed for VOCs only using U.S. EPA SW-846 Method 8260. START has requested a standard turnaround time of 14 days from the laboratory.

It is estimated that 100 soil samples will be collected during this SA. In addition to these samples QA/QC samples, will also be collected. Soil samples will be analyzed for VOCs using U.S. EPA SW-846 Method 8260.

It is estimated that 16 sediment samples will be collected from 8 locations during the SA. In addition to this, QA/QC samples will also be collected. Sediment samples will be analyzed for VOCs using U.S. EPA SW-846 Method 8260.

2.6 FIELD QUALITY-CONTROL SAMPLES

Field duplicates and equipment blank samples will be collected at a frequency of 1 per 10 project samples per parameter. Trip blanks will also be collected at a frequency of one per sample cooler shipment of aqueous VOC samples.

2.7 ANALYTICAL LABORATORY PROCEDURES

Samples collected for VOC analyses will be analyzed by the analytical laboratory, which will follow the methods specified in SW-846-8260.

2.8 DATA VALIDATION/MANAGEMENT

All laboratory analytical data will be validated by a WESTON Data Validator. The following guidelines for data validation will be utilized:

> Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses– U.S. EPA, October 1999.

2.9 SAMPLE PACKAGING, STORAGE, AND SHIPMENT

Sample containers will be labeled and shipped with a sample tag affixed to each container. Samples will be placed in plastic zipping bags. Bagged containers will be placed in appropriate transport containers, and the containers will be packed with appropriate absorbent material, such as vermiculite, and preserved with ice to 4° Celsius. All sample documents (e.g., chain of custody) will be affixed to the underside of each transport-container lid. The lid will be sealed with shipping tape, and custody seals will be affixed to the transport container. Transport containers will be labeled with the origin and destination locations.

Regulations for packaging, marking, labeling, and shipping hazardous materials and wastes are promulgated by DOT. Air carriers that transport hazardous materials require compliance with the current International Air Transport Association (IATA) Regulations, which apply to the shipment and transport of hazardous materials by air carrier. START will follow IATA regulations to ensure compliance.

2.10 SITE HEALTH AND SAFETY

The Site Health and Safety Plan will meet the OSHA requirements of 29 CFR 1910.120. The HASP will be read and signed by each individual from START, WESTON's subcontractors, and all other personnel who will be on-site. Also, START will work with JULIE to have all underground utilities surrounding the borings to be advanced by the CPT contractor located prior to the start of the scheduled field work. Marking of underground utilities at Geoprobe locations will be the responsibility of IEPA personnel since Geoprobe activities will not be under the direct control of START.

Elements required by 29 CFR 1910.120 are outlined in the HASP. These elements concern the regulatory status of the site; hazard assessment and equipment selection; source/location of contaminants and hazardous substances; chemical, biological, radiation, and physical hazards of concern; medical surveillance; site hazard monitoring, program; and PPE for employee protection, monitoring, and decontamination. In accordance with WESTON's PPE program and 29 CFR 1910.132, the Site Health and Safety Coordinator (SHSC) and/or the Site Manager have evaluated conditions and verified that the PPE selection outlined in the HASP is appropriate for the hazards known or expected to exist.

2.11 SITE CONTROL MEASURES

Site control measures include a description of the contamination zone, safe-zone boundary, and other requirements of 29 CFR 1910.120. Contamination-zone and safe-zone boundaries are yet to be determined for each of the boring locations and will be delineated prior to conducting sampling activities.

Personnel and equipment decontamination will be conducted in accordance with START's HASP and standard operating procedures (SOPs) as part of the SAP. Decontamination is performed as a quality-assurance measure and a safety precaution. It prevents cross contamination among samples and helps maintain a clean working environment for the safety of all field personnel. All used PPE materials will be properly contained, bagged, labeled, and left on-site to be disposed of at the discretion of the U.S. EPA.

2.12 SITE PREPARATION

Prior to advancing any borings using the CPT rig, START will work with JULIE to identify any overhead and underground utilities near the such as the following:

1. Electrical lines and appliances
2. Gas lines
3. Pipelines
4. Steam lines
5. Water lines
6. Sewer lines
7. Pressurized air lines
8. Cable television lines
9. Telephone lines

WESTON's SOP Number FLD 34-Utilities is part of the Site-Specific Sampling Plan and/or HASP.

Approximately one week prior to the site assessment, START will work with representatives of the U.S. EPA to flag all of the boring locations and locate them using a global positioning system (GPS) unit provided by U.S. EPA.

Marking underground utilities at Geoprobe locations will be the responsibility of IEPA personnel since Geoprobe activities are not under contract to or under the direct control of START.

2.13 SITE ASSESSMENT REPORT

START will prepare a Site Assessment Report that accurately establishes the site characteristics such as media contaminated, extent of contamination, and the results of the geologic investigation.

START will initially prepare a draft Site Assessment Report, which includes the following:

- Site Background - START will assemble and review available facts about the regional conditions and conditions specific to the site.
- Investigation
  - Field investigation and technical approach
  - Chemical analysis and analytical methods
  - Field methodologies
- Site Characteristics
- Discussion of Investigation Results
- Summary and Conclusions

After the U. S. EPA reviews the draft SA Report, START will incorporate U. S. EPA comments and submit the final SA Report.

SECTION 3

PROJECT TEAM ORGANIZATION

Operational responsibilities involving execution and direct management of the technical and administrative aspects of this project have been assigned as follows:

U.S. EPA On-Scene Coordinator — Mr. Steve Faryan is the U.S. EPA OSC for this project.

START Program Manager—Mr. Dean Geers is the START Program Manager. The Program Manager has overall responsibility for the work assignment. The Program Manager is responsible for ensuring that the project meets all U.S. EPA objectives and quality standards. He is also responsible for ensuring that all work is executed in accordance with the U.S. EPA's technical directives. The START Program Manager is responsible for assigning and monitoring the functions and responsibilities of the START Project Manager. In addition, he will commit the necessary resources and personnel to meet the objectives of this removal assessment.

START Project Manager—Mr. Omprakash Patel is the Project Manager. The Project Manager is responsible for implementing the project objectives using the personnel assigned. The Project Manager's primary function is to ensure that the technical, financial, and scheduling objectives are achieved successfully. The START Project Manager will coordinate with the START Program Manager and Quality Assurance Manager and will be the major point of contact and control for matters concerning the project. His other responsibilities include the following:

- Coordination and management of project personnel;
- Project scheduling;
- Coordination and review of required deliverables;
- General quality assurance of field activities;
- Representation of the project team at meetings and public hearings;
- Overall responsibility for all audits under the START contract.

START Technical Lead–Mr. Kurt Fischer will serve as the START Technical Leader and will be responsible for ensuring that the technologies selected for the geologic investigation and groundwater sampling are appropriate for the site conditions. Mr. Fischer will also be responsible for ensuring that boring locations are appropriate based on previous studies and facility-specific information U.S. EPA obtains. The Technical Lead will also provide the initial technical review of all deliverables and data-collection activities.

START Project Leader/Field Team Leader–Mr. Ben Maradkel will serve as the START Project Leader/Field Team Leader and will be responsible for the daily direction of the team members regarding the TDD-specific tasks. The START Project Leader/Field Team Leader will also coordinate site activities with IEPA. In essence, this person will be responsible for the management of the field team and the supervision of all field activities.

START Site Health and Safety Coordinator (SHSC) – Mr. Ben Maradkel will also serve as the individual responsible for implementing the Health and Safety Plan. The SHSC will perform health and safety monitoring and ensure compliance with all health and safety requirements.

START Field Geologist - START will identify an individual to serve as the field geologist for this site assessment. This individual will be responsible for overseeing the CPT contractor and ensuring that geologic information obtained during the investigation is accurate.

SECTION 4

PROJECT SCHEDULE

4.1 SCHEDULE

The project schedule to implement the scope of work in this Work Plan is outlined below:

Date	Task
2 April 2002	Submit Draft Phase II Work Plan to U.S. EPA for review.
3 April - 6 April 2002	Incorporate U.S. EPA comments and finalize SA Work Plan.
8 April - 12 April 2002	Mobilization. Stake out boring locations and identify utilities, secure property access.
15 April - 15 May 2002	Perform Site Assessment field activities (WESTON START and IEPA).
30 May 2002	Analytical Data Receipt.
28 June 2002	Submit Draft Phase II Site Assessment Report.

ATTACHMENT 1

BACKGROUND SUPPORTING INFORMATION

HAS BEEN REDACTED

CONTAINS ENFORCEMENT CONFIDENTIAL INFORMATION